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# CULTIVATING THE CULTURAL MEMORY OF *RANUNCULUS* *PAUCIFOLIUS* T. KIRK, A SOUTH ISLAND SUBALPINE BUTTERCUP

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## Abstract

Building from an idea outlined in Libby Robin's landmark study *How a Continent Created a Nation* (2007), this article traces shifting European attitudes towards *Ranunculus paucifolius*, a rare subalpine buttercup, from 'strange and foreign' to 'familiar' then 'endangered'. I draw from fragments of historical evidence held in museums, botanic gardens, archives, and university teaching collections in order to understand how and why the Castle Hill buttercup became important to Canterbury's high country identity and in need of safeguarding. Since entering the Western scientific record, *R. paucifolius* has been observed growing in home gardens and botanic garden nurseries, as well as in the wild and in experimental nursery plots at Castle Hill, its only known habitat, between the Torlesse and Craigieburn ranges in the South Island of New Zealand. Organised around the themes of discovery, classification and conservation, this article unearths certain ambiguities and risks associated with the preservation of regionally and nationally significant plants, and highlights the evolving importance of indigenous flora in cultural memory.

**Keywords:** *Ranunculus paucifolius*, Canterbury high country, New Zealand, native plants, heritage, cultural memory, conservation

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Figure 1: Meet *Ranunculus paucifolius*, a small, yellow-flowered buttercup, endemic to Castle Hill in the Canterbury high country.

Source: Photo by D. Kimber, Department of Conservation Te Papa Atawhai.

## Introduction

*Ranunculus paucifolius* T. Kirk, also known as ‘little frog’,<sup>2</sup> grows 700 metres above sea level at the base of a limestone basin called Castle Hill in the Canterbury high country (see Figure 1) at the foothills of the Southern Alpine Range (see Figure 2).<sup>3</sup> *R. paucifolius* shares its habitat with 14 other endangered plant species, such as

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2 ‘Rana’ is Latin for frog and possibly refers to the bog-like landscapes where buttercups traditionally grew. ‘Paucifoliate’ means that the plant has few leaves: see ‘*Ranunculus paucifolius*’, The New Zealand Plant Conservation Network, page last updated 31 July 2014, [nzpcn.org.nz/flora\\_details.aspx?ID=2372](http://nzpcn.org.nz/flora_details.aspx?ID=2372), accessed 20 December 2016.

3 This article started as a paper entitled ‘Lancelot and Little Frog, tracing McCaskill’s legacy, the preservation of the Castle Hill buttercup (*Ranunculus paucifolius*)’ delivered at the New Zealand Historical Association Conference, University of Canterbury, Christchurch, 2–4 December 2015, at the request of Professor Mike Roche, Massey University. There was rapid interest in the story. In February 2016 it was developed into a special edition blog post on museums and ecology for the Anthropology and Environment Society, a section of the American Anthropological Association, edited by Theresa Miller, and then in October 2016 revised from an intangible natural heritage perspective for Katie Pickles et al. (eds), *History Making a Difference: New Approaches from Aotearoa* (Newcastle upon Tyne: Cambridge Scholars, forthcoming 2017). This article, at the suggestion of the editor and reviewers, considers the role of plants (and gardening) in cultural memory.

*Myosotis colensoi*, the Castle Hill forget-me-not.<sup>4</sup> In 1954 the owners of the six-hectare ecological hotspot at Castle Hill gifted the land to the Crown; it was then designated a 'Reserve for the Protection of Flora and Fauna', specifically to protect *R. paucifolius*. The reserve was the first of its kind on mainland New Zealand. Access was restricted to scientific purposes only.<sup>5</sup> Part of *R. paucifolius*' allure is its status as a rare plant since its scientific discovery by John Enys (1837–1912) in 1879. Enys, described by the environmental historian Paul Star as a 'Cornish patron of New Zealand Science',<sup>6</sup> co-owned the Castle Hill sheep station with his brother Charles from 1864 to 1901. Today 67 *R. paucifolius* grow at Castle Hill.<sup>7</sup> Some of the plants are over 80 years old. Walter Brockie, a botanist who worked at the Christchurch Botanic Gardens during the 1940s, thought that the plant's ashen-purple leaves gave it a primitive, seaweed-like appearance.<sup>8</sup> *R. paucifolius* is wind-pollinated and twentieth-century Canterbury-based scientists believed that the shifting nature of little frog's sloping limestone scree habitat hindered germination and seedling growth, which dramatically reduced the chance for new buttercup communities to establish themselves without human intervention.<sup>9</sup> It is not known whether *R. paucifolius*' pre-human habitat extended beyond the Castle Hill basin; its habitat could have always been small and the plant's population base may always have been sparse.<sup>10</sup>

4 'Myosotis colensoi', The New Zealand Plant Conservation Network, page last updated 19 December 2014, [www.nzpcn.org.nz/flora\\_details.aspx?ID=74](http://www.nzpcn.org.nz/flora_details.aspx?ID=74), accessed 20 December 2016.

5 Lance McCaskill, *A History of Scenic Reserves in New Zealand* (Wellington: Department of Lands and Survey, 1972), 9–10.

6 Paul Star, 'John Enys: Cornish Patron of New Zealand Science', *Journal of the Royal Institution of Cornwall* n.s. 2, nos 2, 3 (1996): 30–9.

7 'Kura Tawhiti Conservation Area', Department of Conservation, [doc.govt.nz/parks-and-recreation/places-to-go/canterbury/places/kura-tawhiti-conservation-area/](http://doc.govt.nz/parks-and-recreation/places-to-go/canterbury/places/kura-tawhiti-conservation-area/), accessed 26 February 2017.

8 W. B. Brockie, 'Ranunculus Paucifolius T. Kirk', *Christchurch Domains Board Bulletin* 2 (1946): 5.

9 A. Wall, 'Ranunculus paucifolius T. Kirk: Its Distribution and Ecology, and the Bearing of these upon certain Geological and Phylogenetic Problems', *Transactions and Proceedings of the Royal Society of New Zealand* 52 (1920): 90–105, [rsnz.natlib.govt.nz/volume/rsnz\\_52/rsnz\\_52\\_00\\_001090.html#n136](http://rsnz.natlib.govt.nz/volume/rsnz_52/rsnz_52_00_001090.html#n136), accessed 20 December 2016; L. W. McCaskill, *The Castle Hill Buttercup* (Ranunculus paucifolius): *A story of preservation*. Special publication 25 (Lincoln: Tussock Grasslands and Mountain Lands Institute, Lincoln College, 1982).

10 Personal communication with Dr Pieter Pelser, Director of the University of Canterbury Herbarium (CANU), 2 September 2016.

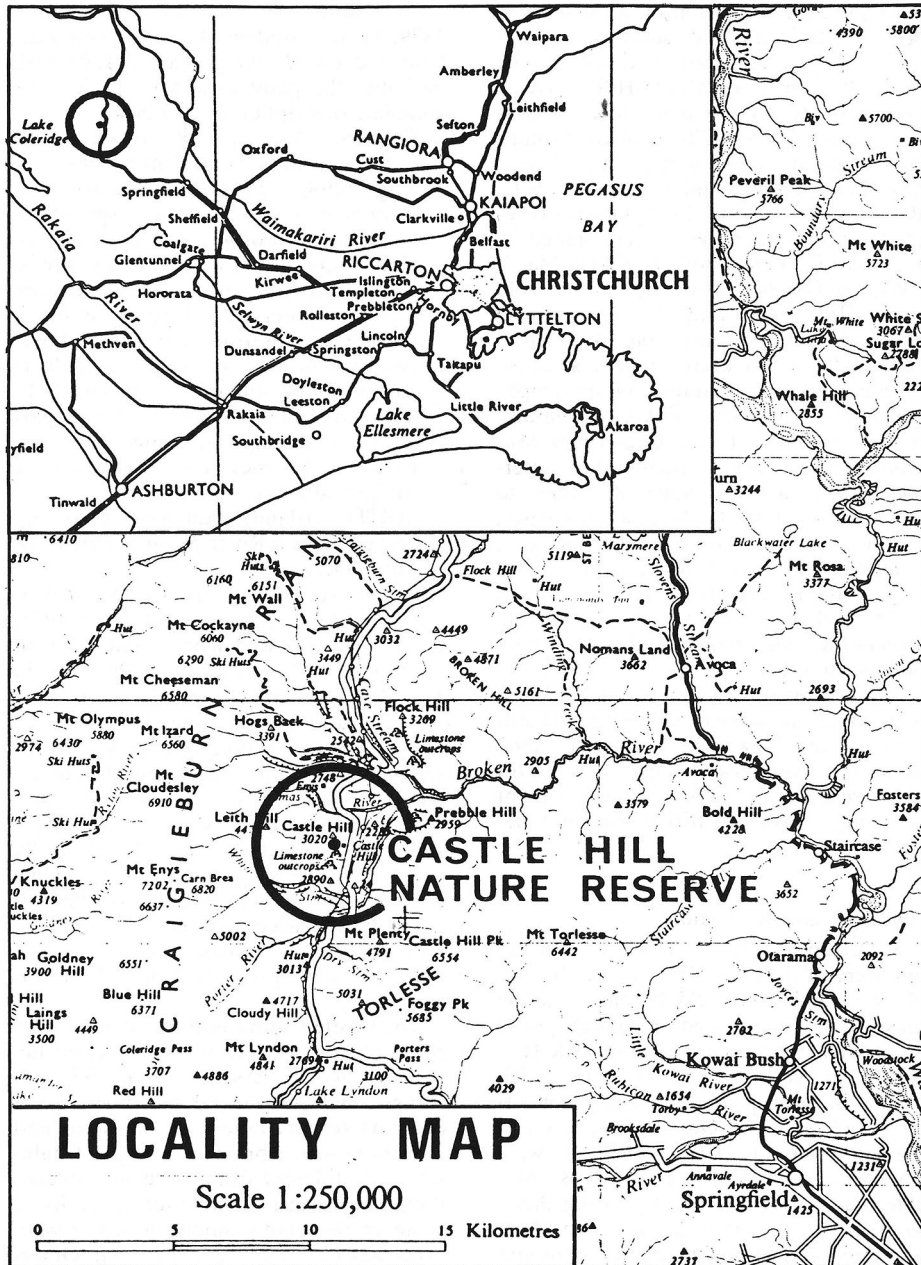


Figure 2: Castle Hill Nature Reserve map.

Source: Originally published in L. W. McCaskill, *The Castle Hill Buttercup* (*Ranunculus paucifolius*), *A story of preservation*. Special publication 25 ([Lincoln]: Tussock Grasslands and Mountain Lands Institute, Lincoln College, 1982). Copyright Lincoln University.

Why should we be interested in this plant? Scientists argue that New Zealand's isolation and remoteness from other land masses has allowed for unique wildlife adaptation and evolution, particularly in the alpine and subalpine regions.<sup>11</sup> Most of New Zealand's subalpine and alpine *ranunculi* are restricted to the South Island, and to Canterbury in particular. *R. paucifolius*' origin moment occurred 20 million years ago when amplified movement between the Pacific and Tasman plates pushed the sunken, low-lying, swampy land mass upwards. The historical biogeographer George Gibbs described this mountain uplift as a 'key event', and the historical botanist John Lovis stated that it provided a remarkable evolutionary opportunity for flowering plants.<sup>12</sup> With only a small genetic divergence, the ancient *R. paucifolius* ancestors adapted to the newly formed treeless zone of high rocky peaks and loose shingle scree slopes.<sup>13</sup> *R. paucifolius* is neither the highest-altitude buttercup—this honour belongs to *R. grahamii*, known to grow only in Mount Cook National Park—nor is it the prettiest; the botanists David R. Given and Colin F. J. O'Donnell accord this honour to *R. godleyanus* because of its 'lush leaves and brilliant yellow flowers'.<sup>14</sup> More importantly, Given and O'Donnell considered *R. godleyanus*, *R. grahamii* and *R. paucifolius* to be 'regionally rare' and in need of safeguarding.<sup>15</sup> There is general agreement among botanists that human settlement has had the greatest negative impact on indigenous plant communities in the Canterbury region—by displacement of their habitat, or from exotic plant invasion.<sup>16</sup> Some buttercup species are considered 'sparse' because they live in small, scattered populations; others are 'range restricted', which means they are confined to a particular habitat, such as limestone or scree slopes.<sup>17</sup> *R. paucifolius*' is exceptional in that it lives only at one known location—Castle Hill.

Certain approaches from the interdisciplinary fields of multispecies studies, heritage studies and environmental history were utilised to unearth this buttercup's history.

11 David Young, *Our Islands, Our Selves: A history of conservation in New Zealand* (Dunedin: Otago University Press, 2004).

12 John Lovis, 'Botanical history', in *The Natural History of Canterbury*, ed. Michael Winterbourn et al., 3rd ed. (Christchurch: Canterbury University Press, 2008), 162–3; George Gibbs, *Ghosts of Gondwana: The History of Life in New Zealand* (Nelson: Craig Potton Publishing, 2006), 60.

13 Gibbs, *Ghosts of Gondwana*, 113, 124–6.

14 David R. Given and Colin F. J. O'Donnell, 'Rare and endangered plants and animals', in *The Natural History of Canterbury*, ed. Winterbourn et al., 806–7.

15 Given and O'Donnell, 806–7.

16 P. J. de Lange et al., 'Threatened and uncommon plants of New Zealand', *New Zealand Journal of Botany* 37, no. 4 (1999): 603–28, doi.org/10.1080/0028825X.1999.9512657.

17 P. J. de Lange et al., 'Threatened and uncommon plants of New Zealand (2008 revision)', *New Zealand Journal of Botany* 47, no. 1 (2009): 61–96, doi.org/10.1080/00288250909509794.



First, influenced by the multispecies scholar Donna Haraway, this article joins a larger conversation considering how encounters with other species, which include plants, help humans learn.<sup>18</sup> Haraway's ideas evolved from her enquiry into dogs as companion animals. The field of interspecies studies has expanded to include human engagements with microorganisms,<sup>19</sup> fungi,<sup>20</sup> and, in this instance, a subalpine buttercup. The plant enthusiasts featured in this article rode horses, walked, or drove to the buttercups at Castle Hill; they followed the seasons, and learnt about the plant and its habitat through sight, sound, touch and smell.<sup>21</sup>

Second, from a heritage studies perspective, it employs the museum director Erick Dorfman's idea that engaging with physical evidence from natural-cultural environments serves as a powerful way to help raise public awareness about ecology and species conservation.<sup>22</sup> The plant enthusiasts featured in this article utilised the power of one plant to introduce the public to conservation; likewise, the plant's long-term survival is reliant on educating today's public about the importance of preserving regional biological diversity.

The third influential idea stems from select environmental historians who portray human-nature encounters in New Zealand since the arrival of the first colonists from east Polynesia c. 1250 as 'opportunistic'.<sup>23</sup> Nature was utilised by the ancient Māori, and nineteenth-century white colonial settlers who followed, for economic purposes: as food; for shelter, warmth, and trade; or, in the case of the buttercup, for scientific knowledge.<sup>24</sup> This scientific-utilitarian mindset is akin to that demonstrated by Libby Robin's study into white settlers' attitudes towards Australian indigenous flora, which progressed from 'strange and foreign' to 'familiar', then 'endangered'.<sup>25</sup> A similar theme concerning New Zealand's environmental history has been the changing perception of indigenous flora and fauna in the face

18 Haraway was initially interested in demonstrating how cyborgs opened up new possibilities about the border between humans and technology: see Donna Haraway, *Simians, Cyborgs and Women: The Reinvention of Nature* (New York: Routledge, 1991); Donna Haraway, *The Companion Species Manifesto: Dogs, People, and Significant Otherness* (Chicago: Prickly Paradigm Press, 2003).

19 See Thom van Dooren, Eben Kirksey and Ursula Münster, 'Multispecies Studies: Cultivating Arts of Attentiveness', *Environmental Humanities* 8, no. 2 (2016): 1–23, [environmentalhumanities.dukejournals.org/content/8/1.toc](http://environmentalhumanities.dukejournals.org/content/8/1.toc), accessed 26 February 2017, [doi.org/10.1215/22011919-3527695](https://doi.org/10.1215/22011919-3527695).

20 Anna Tsing, 'Unruly Edges: Mushrooms as Companion Species', *Environmental Histories* 1 (2012): 141–54, [doi.org/10.1215/22011919-3610012](https://doi.org/10.1215/22011919-3610012).

21 These sensory ideas stemmed from reading Elizabeth Curtis, 'Walking Out of the Classroom: Learning on the Streets of Aberdeen', in *Ways of Walking: Ethnography and Practice on Foot*, ed. Tim Ingold and Jo Lee Vergunst (Farnham: Ashgate, 2008), 143–54.

22 Eric Dorfman, 'Intangible Natural Heritage: An Introduction', in *Intangible Heritage: New Perspectives on Natural Objects*, ed. Eric Dorfman (Hoboken, NJ: Taylor and Francis, 2011), 1–13.

23 Atholl Anderson, 'Māori land and livelihood AD 1250–1850', in *The Natural History of Canterbury*, ed. Winterbourn et al., 66–8; Paul Star, 'Humans and the Environment in New Zealand, about 1800 to 2000', in *The New Oxford History of New Zealand*, ed. Giselle Byrnes (South Melbourne, Vic.: Oxford University Press Australia and New Zealand, 2009), 47–70.

24 Jim McAloon, 'Resource frontiers, environment, and settler capitalism: 1769–1860', in *Environmental Histories of New Zealand*, ed. Eric Pawson & Tom Brooking (Melbourne: Oxford University Press, 2002), 52–66.

25 Libby Robin, *How a Continent Created a Nation* (Sydney: University of New South Wales Press, 2007).

of both its increasing scarcity and an increasing sense among New Zealanders of a national identity.<sup>26</sup> This has been described in terms of the rise of organisations promoting the indigenous environment,<sup>27</sup> and in terms of the regard shown for particular bird species, such as the kiwi.<sup>28</sup> It has frequently been described in terms of native forests in general,<sup>29</sup> and in relation to particular trees, such tī, the cabbage tree,<sup>30</sup> and the red flowering pōhutukawa and rātā.<sup>31</sup> Fewer articles have been published on the environmental history of indigenous New Zealand plants, with the exception of trees,<sup>32</sup> making this article—which is dedicated to understanding how and why a small flowering plant became important to Canterbury’s high country identity—a timely addition to New Zealand environmental history.

Organised around the themes of discovery, classification and conservation, this article highlights the evolving importance of indigenous flora in cultural memory. In an attempt to make visible the ancient transcultural and transnational tradition of *nature–culture* engagement, the author acknowledges a relationship between *R. paucifolius* and ancient and contemporary Māori, who are *mana whenua* to the area; however, the body of evidence examined places emphasis on Western science. This article utilises documented evidence left by a select number of individuals over the past 150 years or so who engaged with and observed this buttercup growing in the wild at Castle Hill, in home gardens, or specialist botanic gardens, and in doing so exposes certain dangers associated with the preservation of this regionally and nationally significant plant.

## Ancient buttercup encounters

A relationship between ancient Māori and *R. paucifolius* is possible.<sup>33</sup> These ancient peoples, known as the Waitaha, migrated from the North Island during the mid-thirteenth century and settled along the South Island’s shores. Their habitation is evidenced in the Canterbury high country landscape by cave drawings in rock

26 See for example Paul Star, ‘Native Bird Protection, National Identity and the Rise of Preservation in New Zealand to 1914’, *New Zealand Journal of History* 36, no. 2 (2002): 123–36.

27 Described in L. E. Lochhead, ‘Preserving the Brownies’ Portion: A History of Voluntary Nature Conservation Organisations in New Zealand, 1888–1935’ (PhD diss., Lincoln University, 1994). Special thanks to the reviewers for pointing to this unpublished research.

28 Rebecca Smith, ‘Endangered Emblem: The New Zealand Kiwi, its Conservation and Status as a National Emblem’ (BA long essay, Otago University, 1999). Special thanks to the reviewers for pointing to this source.

29 Paul Star, ‘Native Forest and the Rise of Preservation in New Zealand (1903–1913)’, *Environment and History* 8, no. 3 (2002): 275–94, doi.org/10.3197/096734002129342675.

30 Philip Simpson, *Dancing Leaves: The Story of New Zealand’s Cabbage Tree, Tī Kōuka* (Christchurch: Canterbury University Press, 2000).

31 Philip Simpson, *Pōhutukawa and Rātā: New Zealand’s Iron-hearted Trees* (Wellington: Te Papa Press, 2005).

32 Herdis Hølleland adds to this conversation in ‘Caged for Protection: Exploring Paradoxes of Protecting New Zealand’s *Dactylanthus taylorii*’, forthcoming in *Environment and History*.

33 Aidan J. Challis, *Ka Pakihi Whakatekateka O Waitaha: The Archaeology of Canterbury in Māori Times*. Science & Research Series 89 (Wellington: Department of Conservation, 1995), 12–13.

shelters, and by remnants from moa hunting sites, middens, and gardens—material evidence resistant to the ravages of time and weather. The Ngāti Māmoe, also from the North Island, arrived in the late sixteenth century, followed by Ngāi Tahu around the beginning of the eighteenth century.<sup>34</sup> Pre-European Māori knowledge was passed on by oral tradition, so the high country plant would have been *known* in Mātauranga Māori terms. Mātauranga Māori is a multilayered cultural, scientific, and spiritual understanding of the natural world—knowledge transferred through oral tradition.<sup>35</sup> It is recorded that ancient Māori used buttercups medicinally and that applications, terminology and methods differed between tribal groups.<sup>36</sup>

## Discovery

The nineteenth and early twentieth centuries was the period of scientific discovery on the subalpine botanical frontier where the self-taught gentleman-scientist observed, collected and classified the buttercup during the colonial museum-building era.<sup>37</sup> The first step was to get to know about New Zealand native plants from a comparative point of view, as well as building the natural history collections of the newly formed museums: the Colonial Museum,<sup>38</sup> which opened in Wellington in 1865; and the provincial Canterbury Museum, established in 1867. At the same time, New Zealand's strange, wonderful and weird plant and wildlife were collected and disseminated to the museums and botanic gardens of Europe and the British Empire, in particular the British Museum, established in 1753, and Kew Gardens, founded in 1759.

34 Atholl Anderson, 'A Migration History', in *Ngāi Tahu: A migration history, the Carrington Text*, ed. Te Maire Tau and Atholl Anderson (Wellington: Bridget Williams Books, 2008), 20–37; Atholl Anderson, 'A fragile plenty: pre-European Maori and the New Zealand environment', in *Environmental Histories of New Zealand*, ed. Pawson and Brooking, 30–1.

35 'What is Mātauranga Māori?' Landcare Research Manaaki Whenua, [www.landcareresearch.co.nz/about/sustainability/voices/matauranga-maori/what-is-matauranga-maori](http://www.landcareresearch.co.nz/about/sustainability/voices/matauranga-maori/what-is-matauranga-maori), accessed 20 December 2016.

36 Geoff Walls, *Traditional uses of plants in New Zealand and the Pacific: Commonwealth Science Council, Biological Diversity & Genetics Resources Project, 1968–88, a pilot study summary report* (Christchurch: DSIR, 1988), 13; David Williams, *Matauranga Maori and Taonga* (Wellington: Waitangi Tribunal, 2000).

37 John M. McKenzie, *Museums and empire: Natural history, human cultures and colonial identities* (Manchester and New York: Manchester University Press, 2009).

38 Over its life the Colonial Museum has had several buildings and name changes: it became the Dominion Museum in 1907, followed by the National Museum in 1972, and in 1992 it changed to the Museum of New Zealand Te Papa Tongarewa. See 'Our history: Te Whakapapa o Te Papa', Museum of New Zealand Te Papa Tongarewa, [www.tepapa.govt.nz/about/what-we-do/our-history](http://www.tepapa.govt.nz/about/what-we-do/our-history), accessed 20 December 2016.



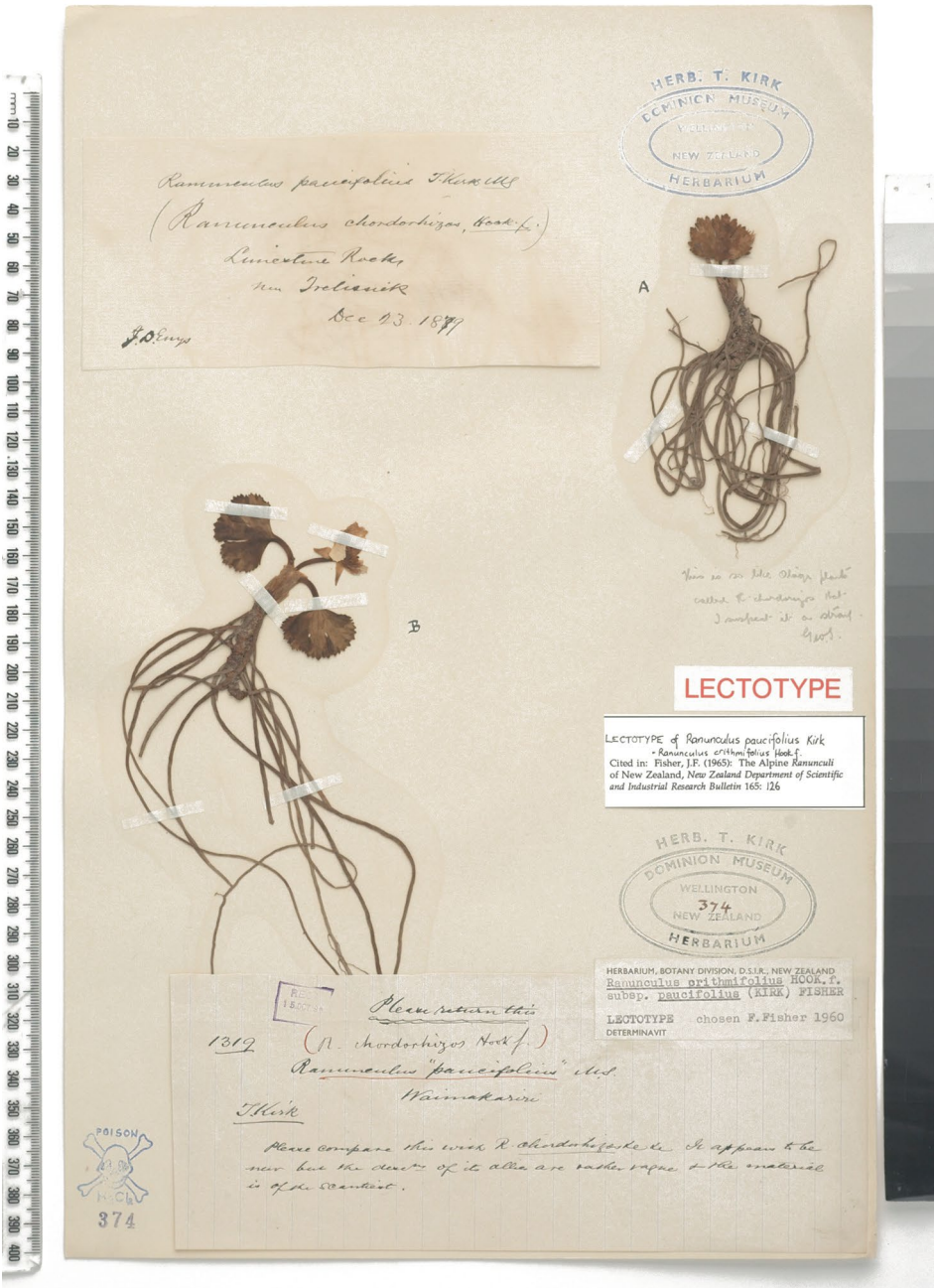


Figure 3: Enys specimen, 'scree buttercup, *Ranunculus crithmifolius* Hook.f., collected 23 Dec 1879, Nr. Trelissick [Castle Hill], New Zealand.'

Source: CC BY-NC-ND licence. Museum of New Zealand Te Papa Tongarewa (SP000374).

During the summer of 1879, John Enys plucked a specimen of *R. paucifolius* from the cool, dry limestone slope near his high country home ‘Trelissick’ and donated it to the Colonial Museum, Wellington (see Figure 3).<sup>39</sup> Enys’s particular speciality was ferns, yet, like most plant enthusiasts of his era, he collected and classified the natural flora and fauna from wherever he travelled.<sup>40</sup> He dispatched a number of live plant specimens to Kew, including the Mount Cook Lily, *Ranunculus lyallii*, the world’s largest alpine buttercup. Star believed that Enys was in a unique position: he was one of the few residents of the Canterbury high country at a time when New Zealand’s subalpine plants were ‘becoming known’ to Western science.<sup>41</sup> Enys himself was well aware that by collecting ‘seeds of rare plants from the hills’ he was actively contributing to the public understanding of science. He was a member of a number of scientific, educational and governing bodies in Canterbury, including the Canterbury Museum, the Canterbury Philosophical Society and Canterbury College.<sup>42</sup> The organisations that Enys was an active member of were based on models imported from Britain and Europe, and instituted to improve the minds of the white settler citizens.<sup>43</sup>

John Enys and his brother Charles (1840–91) bought Castle Hill station in 1864 when the ‘pastoral frontier’ was expanding swiftly westwards from the low-lying Canterbury Plains to the natural barrier of the Southern Alps.<sup>44</sup> The bachelor brothers enjoyed the colonial lifestyle: on horseback, with their good dogs at their heels, they mustered over 1,000 sheep; John botanised, while Charles, who migrated to New Zealand via India, preferred to hunt.<sup>45</sup> Castle Hill was not a financial success for the brothers. The environmental historians Roberta McIntyre and Robert Peden both noted that heavy snowstorms often depleted stock numbers, and when combined with fluctuating wool prices, forced many colonists to ‘sell out’ or ‘abandon’ their Canterbury high country stations.<sup>46</sup> The pattern of economic and environmental volatility continued into the twentieth and early twenty-first centuries. The brothers

39 ‘Ranunculus paucifolius’, Museum of New Zealand Te Papa Tongarewa Collections Online, Registration number SP000374, collections.tepapa.govt.nz/object/674350, accessed 20 December 2016.

40 John D. Enys, ‘On Recent Changes on the Nomenclature of the New Zealand Ferns’, read before the *Philosophical Institute of Canterbury*, 5 October 1870, rsnz.natlib.govt.nz/volume/rsnz\_03/rsnz\_03\_00\_004210.pdf, accessed 20 December 2016.

41 Star, ‘John Enys’.

42 Canterbury College, established in 1873, was rebranded in 1961 as the University of Canterbury or UC, see ‘History’, The University, [www.canterbury.ac.nz/theuni/backgrnd/history.shtml](http://www.canterbury.ac.nz/theuni/backgrnd/history.shtml), accessed 20 December 2016.

43 Star, ‘John Enys’; Jim McAloon, ‘The Christchurch Elite’, in *Southern Capital: Christchurch. Towards a City Biography 1850–2000*, ed. John Cookson and Graeme Dunstall (Christchurch: Canterbury University Press, 2000), 193–221; McKenzie, *Museums and empire*, 212–13; Roberta McIntyre, *Whose high country? A history of the South Island high country of New Zealand* (North Shore, NZ: Penguin, 2008), 89–90.

44 McIntyre, *Whose high country?*, 36–61.

45 Letters back home recorded that 650 rabbits and 1,700 wild pigs were caught in one season. Native wood pigeons (kereru), and wild parrots—probably the forest-dwelling kaka, or the *kākāpō*, a large, flightless parrot, or even the kea, the world’s only alpine parrot—were also shot and consumed.

46 McIntyre, *Whose high country?*, 36; Robert Peden, *Making Sheep Country: Mt Peel Station and the transformation of the tussock lands* (Auckland: Auckland University Press, 2011), 46.

returned to Cornwall in 1891; Charles' failing health was one motivating factor, and the other was that England was always considered home. Castle Hill was sold in 1910, and John remained active in the natural sciences until his death in 1912.

## Classification

Enys's specimen offers a window into the emerging field of botany at the periphery of the British Empire. Following the Linnaean system of naming, ordering and classifying living organisms, Enys's *R. paucifolius* specimen was labelled a lectotype of, or nearly related to, *R. crithmifolius*, another 'Middle Island' subalpine buttercup.<sup>47</sup> *R. crithmifolius* was first mentioned by Joseph Dalton Hooker (1817–1911) in his *Handbook of the New Zealand Flora* (1864).<sup>48</sup> Important scientific figures of the day visited Enys at Castle Hill, namely the colonial botanists Thomas Kirk (1828–1928) and Thomas Frederick Cheeseman (1845–1923), who both worked as curators for the Auckland Museum Institute, established in 1867. Kirk commented in *The Students' Flora of New Zealand and the Outlying Islands* (1899) that only one flower had been sighted and therefore any scientific knowledge of the Castle Hill buttercup was provisional.<sup>49</sup> Cheeseman similarly noted in the 1906 edition of the *Manual of the New Zealand Flora* that 'much more material' was needed 'before a good description could be made of this curious little plant'.<sup>50</sup>

Yet it was Arnold Wall (1869–1966), Professor of English at Canterbury College and a self-taught botanist, who claimed to have solved the mystery surrounding the plant's nomenclature, distribution and ecology, and, importantly, confirmed Castle Hill as *R. paucifolius*' only known habitat.<sup>51</sup>

A twist of fate brought Wall to the buttercup. Dr Leonard Cockayne (1855–1934), an eminent high country botanist, had asked his scientific friends Robert Speight (1867–1949), Canterbury Museum geologist, and William Evans (1864–1959), Professor of Chemistry at Canterbury College, for a specimen of *epilobium*, a willow-herb.<sup>52</sup> Neither Speight nor Evans could identify the plant. Wall, confident from his formative botanical experiences in the Swiss Alps while visiting his sister in

47 Middle Island was another name used for the South Island in the mid to late nineteenth century.

48 J. D. Hooker, like his father William Jackson (1785–1865), was Director of the Royal Botanic Gardens, Kew. Botanical collectors from South America, the South Pacific, Australia, South Asia and India deposited specimens and traded observation notes with the Hookers. See J. D. Hooker, *Handbook of the New Zealand Flora: A systemic description of the native plants of New Zealand and the Chatham, Kermadec's, Lord Auckland's, Campbell's and Macquarrie's Islands* (London: Lovell Reeve & Co, 1864), 6.

49 Thomas Kirk, *The Students' Flora of New Zealand and the Outlying Islands* (Wellington: John Mackay, Government Printer, 1899), 11.

50 T. F. Cheeseman, *Manual of the New Zealand Flora* (Wellington: John Mackay, Government Printer, 1906), 15–16, doi.org/10.5962/bhl.title.12003.

51 Wall, 'Ranunculus paucifolius T. Kirk'.

52 Arnold Wall, *Long and Happy: An Autobiography* (Wellington: A. H. & A. W. Reed, 1965), 116.

the late 1890s, believed he could.<sup>53</sup> Cockayne taught Wall what to look for before he joined Speight and Evans on their camping expedition at Castle Hill station. In his autobiography, Wall confessed to having paid ‘little attention to the native flora of New Zealand’ when he first migrated in 1898.<sup>54</sup> Wall suffered from what Robin terms ‘biological cringe’:<sup>55</sup> the flora were too unfamiliar and strange compared to that of Europe. Wall’s outlook changed when this self-taught botanist and honorary curator of the Canterbury Museum herbarium became more familiar with Canterbury’s subalpine plants.<sup>56</sup> In his quest to understand the subalpine buttercup, Wall frequently visited Castle Hill; he collected and transplanted specimens of *R. paucifolius* and the similar *R. chordorhizos* to his garden laboratory at his family home in Christchurch where he could observe, record, and compare each plant’s lifecycle. Cockayne wrote in *The Cultivation of New Zealand Plants* (1923) that buttercups were the ‘most attractive’ of the ‘flora above the forest-line’, but the most difficult to maintain after their first year in a home garden.<sup>57</sup> *The Cultivation of New Zealand Plants* was a practical educational resource for teachers, students and native-plant enthusiasts. It is uncertain how well Wall’s home garden buttercups thrived. Several of Wall’s specimens are now held at the University of Canterbury’s Herbarium (CANU).<sup>58</sup>

In February 1919, when Wall introduced little frog to the Christchurch branch of the New Zealand Institute, he used his own photographs for illustration. Wall described the plant’s habitat as a small amphitheatre of steep mountain grass and tussock-clad slopes, banked with piles of weathered and unusually shaped limestone rocks or tors.<sup>59</sup> Wall believed the buttercup had adapted to the sloping landscape and the strong *nor-west wind*; pushing its long, fleshy roots 10 or 12 inches (25–30 cm) below the surface, the plant had ‘learnt’ to grow out of the debris.<sup>60</sup> If the limestone surface was kept bare, and the debris blown away, said Wall, the buttercup would have nowhere to live. Significantly, because it was not a travelling plant, Wall believed that it was ‘passing slowly [and] unreluctantly away before our eyes in an age-long euthanasia’.<sup>61</sup> Wall’s observation presents a conservation paradox: the *R. paucifolius* grown in his home garden probably did not thrive for

53 Ibid; A. D. Thomson, ‘Cockayne, Leonard’, from the Dictionary of New Zealand Biography, Te Ara—the Encyclopedia of New Zealand, page last updated 30 October 2012, [www.TeAra.govt.nz/en/biographies/3c25/cockayne-leonard](http://www.TeAra.govt.nz/en/biographies/3c25/cockayne-leonard), accessed 20 December 2016.

54 Wall, *Long and Happy*, 116.

55 Robin, *How a Continent Created a Nation*, 1–10, 31.

56 Arnold Wall, ‘Alpine and Sub-Alpine Flora’, in *Natural History of Canterbury*, ed. R. Speight et al. (Christchurch: Simpson & Williams for the Philosophical Institute of Canterbury, 1927), 145–59.

57 Leonard Cockayne, *The Cultivation of New Zealand Plants* (Auckland: Whitcombe & Tombs, 1923), 92–3.

58 Personal communication with Dr Pelser.

59 Andrew Sturman, ‘Weather and Climate’, in *The Natural History of Canterbury*, ed. Winterbourn et al., 121.

60 Wall, ‘*Ranunculus paucifolius* T. Kirk’, 90.

61 McCaskill, *The Castle Hill buttercup*, 4; Wall, ‘*Ranunculus paucifolius* T. Kirk’.

long, and it appeared that the more than 300 *R. paucifolius* growing in the wild were not thriving either. Wall offered no solution to the problem of ensuring the buttercup's future survival.

## Conservation

In Australia and New Zealand a certain form of patriotism and activism emerged by the turn of the twentieth century when the era of the self-taught gentleman scientist gave way to government men and professional scientists motivated to protect their natural heritage, which included the last remnants of 'undeveloped landscapes and indigenous species' of flora and fauna.<sup>62</sup> Star wrote of a strong emotional sentiment among Māori and Pākehā, the name commonly given to people of European descent living in New Zealand, towards the ancient Gondwana remnants of New Zealand's forests and wildlife;<sup>63</sup> however, there was always a utilitarian undercurrent, and nature not otherwise useful for agricultural purposes was eventually incorporated into tourism developments and the national park system. Herdis Hølleland, who has examined human–animal–*Dactylanthus taylorii* relations at Tongariro National Park, pointed to a certain paradox. Once natural objects, species, or natural environments were 'framed' for scientific, recreational, or scenic purposes, they then needed to be managed, conserved and controlled.<sup>64</sup> Habitat loss has been one of the key drivers of wildlife conservation, more so from the 1950s, when the International Union for Conservation of Nature (IUCN) was established, providing an international voice to already existing local initiatives.<sup>65</sup> Protecting New Zealand's biodiversity involved front-line conservation methods—gardening in the field—combined with promoting public education through conservation-in-action.<sup>66</sup>

Walter Brockie (1897–1972), who had migrated from Scotland to New Zealand in 1921, undertook a formal study of the Castle Hill buttercup from 1940 to 1945 as part of his duties at the Christchurch Botanic Gardens. Brockie noted that little frog's future was fragile: it was not able to thrive in competition with the tussocks and other native grasses that had travelled into the area, nor could it survive the environmental impact caused by sheep and cattle introduced after 1858, when the

62 Robin, *How a Continent Created a Nation*, 195.

63 Paul Star, 'New Zealand Environmental History: A Question of Attitudes', *Environment and History*, 9, no. 4 (2003): 463–75.

64 Hølleland, 'Caged for Protection'.

65 Chris Huxley, 'CITES: The Vision', in *Endangered Species Threatened Convention: The Past, Present and Future of CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora*, ed. Jon Hutton and Barnabas Dixon (London: Earthscan, 2000), 5; Morne A. du Plessis, 'CITES and the Cause of Extinction', in *Endangered Species Threatened Convention*, ed. Hutton and Dixon, 16.

66 Marie A. Brown et al., *Vanishing Nature: Facing New Zealand's biodiversity crisis* (Auckland: Environmental Defence Society Incorporated, 2015).



Porter brothers first established Castle Hill station. When visiting the buttercups at Castle Hill, Brockie observed the impact the stock had on the plants as they traversed the scree slope down towards the brook that drained in the basin nearby: they dislodged debris, which buried the plants, and as they walked over the plants, their hooves sheared the leaves and disturbed the plant's roots. Brockie noted that the buttercup plants growing in the homestead garden, which had been transplanted by Robert Blackley senior, the Castle Hill station manager in the 1920s, had more leaves than those growing in the wild. Brockie wondered if the buttercup's future survival depended on excluding stock, so he tested his idea. With the assistance of Robert Blackley junior, station manager and later honorary ranger, the men transported 'four iron standard and eight yards of wire-netting' by car and made 'an experimental nursery plot.'<sup>67</sup> Two buttercups were transplanted into conditioned soil and the enclosure kept weed-free. Over a five-year period, Brockie observed the plants and noted that the buttercups in the control site appeared to be healthier than those exposed to the damaging effects of livestock's feet and invasive weeds, which had acclimatised to the high country landscape.<sup>68</sup>

Brockie's findings were published in the *Christchurch Domains Board Bulletin* in 1946.<sup>69</sup> However, J. A. McPherson (1900–80), the Director of the Christchurch Botanic Gardens, and Lance McCaskill (1900–85), a soil conservationist, national park advocate, agricultural teacher at Lincoln College and first Director of the Tussock Grasslands and Mountain Lands Institute at Lincoln,<sup>70</sup> who were privy to the results before publication, took the Castle Hill buttercup matter up with the Royal New Zealand Institute of Horticulture at its 1942 annual conference held in Christchurch. The goal was to ensure *R. paucifolius*' future, and a 'remit regarding its preservation' was sent to the minister responsible for scenery preservation.<sup>71</sup> Brockie left Christchurch in 1947, taking up a post at the Ōtari Plant Museum in Wilton, Wellington, and McCaskill, with the support of the Lands and Survey Department, took on the responsibility of safeguarding the endangered Castle Hill buttercup.

In 1948, a fence was erected to protect the plant from humans, livestock and pests such as rabbits, hares and possums.<sup>72</sup> In 1953, the Castle Hill area was fully surveyed, which entailed aerial photographs and large-scale map marking and numbering of each buttercup cluster. The landowners of Castle Hill then gifted the six-hectare ecological hotspot to the Crown, and a reserve for the protection of

67 Brown et al., *Vanishing Nature*.

68 Thomas B. Isern, 'Companions, stowaways, imperialists, invaders: Pests and weeds in New Zealand', in *Environmental Histories of New Zealand*, ed. Pawson and Brooking, 233–45.

69 Brockie, 'Ranunculus Paucifolius T. Kirk'.

70 A. P. Thomson, 'Obituary: Lancelot William McCaskill: An appreciation', *New Zealand Journal of Forestry* 30, no. 1 (1985): 7–13.

71 McCaskill, *The Castle Hill Buttercup*, 5; Brockie, 'Ranunculus Paucifolius T. Kirk', 10.

72 McCaskill obtained wire from the superintendents of the reserves in Dunedin and Christchurch and sourced silver pine posts from Ross, 7.

flora and fauna was gazetted. Public access was controlled by permit and restricted to 'scientific study' only.<sup>73</sup> And as a further protective measure, little frog was added to the IUCN's Red List of Threatened Species in the 1970s.

McCaskill's objective, through active gardening, was to maintain the buttercup population at 250 to 300 plants; following the seasons, he and other buttercup enthusiasts weeded the limestone slope, collected seeds and sowed them in situ, and once the seedlings had set, transplanted them to new garden plots at Castle Hill. Until 1980, McCaskill remained passionate and committed as honorary *R. paucifolius* caretaker and conservation advocate, and provided regular reports to the Commissioner of the Department of Lands and Survey; his letters recorded in detail the weather—snow was reported as being early or late, which impacted on when plants flowered and seeds set.

Preserving the Castle Hill buttercup made the plant a must-see. Each year, botanists from around New Zealand applied for permits. McCaskill gave numerous guided tours to staff of the Department of Lands and Survey, and members of the Christchurch branch of the Forest and Bird Protection Society visited regularly, as did members of the Canterbury Alpine Garden Society. Dignitaries from around the world also visited, including, in the 1970s, members of the International Dendrology Society, and delegates to the IUCN's 15th General Assembly, which met in Christchurch in 1981 (see Figure 4).<sup>74</sup> Some groups were quite large, involving 30, 50, or 100 people. Applicants whose request for a permit was declined because their reasons did not fit the criteria of scientific study, were invited to view the buttercups at the Castle Hill homestead garden instead. McCaskill and the honorary rangers, who were often station managers, supported by their wives, always gave a public talk about the importance of preserving the Castle Hill buttercup.

McCaskill distributed seeds to Kew, the Christchurch Botanic Gardens, and other permitted researchers. Reports from Kew and other researchers noted that the buttercup seeds were hard to strike, and domesticated plants did not live as long as they did in the wild.<sup>75</sup> Photographic evidence reveals *R. paucifolius* was planted in McCaskill's home garden.<sup>76</sup> Perhaps McCaskill, as honorary ranger, was permitted to have specimen plants. McCaskill no doubt used these garden plants in teachable moments to tell the story of the preservation of the Castle Hill Buttercup to guests, friends, neighbours and family members. He would also have used the plants for his own observations. McCaskill's last task was to write the *Castle Hill Nature Reserve*

73 McCaskill, *A History of Scenic Reserves in New Zealand*, 8–9.

74 McCaskill, *The Castle Hill Buttercup*; Domains—Castle Hill 1964–1977, Part 2, CAY CH134 2949, Box 282, 13/25, Archives New Zealand Christchurch Regional Office.

75 Email correspondence, Louise Clarke, Art and Archives, Royal Botanic Gardens, Kew, 11 April 2016; Domains—Castle Hill 1964–1977, Archives New Zealand Christchurch Regional Office.

76 Margery Blackman papers, Collection Number 1665, Macmillan Brown Library & Archive, University of Canterbury.

*Management Plan* that the Department of Lands and Survey adopted in 1980 just as his health started to fail.<sup>77</sup> The management plan outlined the purpose of the reserve, which was for scientific research, education and interpretation. There was a section on how to manage public access, which involved building internal tracks with markers to guide pedestrians; expanding vehicle access; and maintaining fencing, fire control and signage; as well as future extensions of the reserve. The final section was dedicated to weed control, how to monitor the plant, and notes on direct seeding and transplanting *R. paucifolius*. The management plan reinforced what McCaskill had taught to dozens of Lincoln College agricultural students, volunteers, and other conservation enthusiasts.



Figure 4: The 15th IUCN General Assembly met in Christchurch in 1981, and McCaskill gave the visiting delegates a Castle Hill buttercup tour. In this picture Lance McCaskill, wearing a blue hat, shows off the buttercups to the scarf-wearing botanist Marty Talbot, wife of IUCN Director General Lee Talbot.

Source: Photograph originally published in *The Castle Hill Buttercup (Ranunculus paucifolius): A story of preservation*. Special publication 25 ([Lincoln]: Tussock Grasslands and Mountain Lands Institute, Lincoln College, 1982). Copyright Lincoln University.

<sup>77</sup> *Castle Hill Nature Reserve Management Plan*, Management Plan Series No. NR 3, Department of Lands and Survey (1980), Archives New Zealand Christchurch Regional Office.

## Ambiguities and risks

McCaskill's mission was 'to learn about the plant' in order to 'save the plant'.<sup>78</sup> Yet Deborah Bird Rose noted that while 'people save what they love,' it was also possible for humans to 'love a place and still be dangerous to it.'<sup>79</sup> Rose's ideas highlight the threats of extinction of indigenous plants that dawned at the same time that Western ecologists and environmentalists became aware of the need to conserve and preserve unique environments for future generations. Saving the plant appeared to produce certain ambiguities and risks.

Initially limestone quarrying 'only five to six yards away' from the edge of the buttercup habitat briefly presented a risk; today the quarry is no longer in use.<sup>80</sup> Natural disasters presented another danger. Fire nearly destroyed the reserve in 1984; handwritten Department of Lands and Survey papers reveal that it was a lucky escape. However, it was the rise in outdoor recreation from the late 1970s that caused McCaskill and his buttercup advocates at the Department of Lands and Survey the greatest concern. In 1978, W. Lammerick, a geologist at the Commission for Crown Lands (CCL), concluded in his report on the Castle Hill reserve that it was a 'geological showpiece'<sup>81</sup> and Tim Wethey, author of *Canterbury Rock* (1989), called Castle Hill 'the soul-centre of climbing'.<sup>82</sup> When Wethey compiled information for his book, which included maps and detailed descriptions, including the level of difficulty of each climb and a list of camping sites, internal CCL documents reveal there was concern about the expected increase in visitors to the region. Topics debated centred around people management, including: the need for a larger car park; whether to supply toilets and rubbish bins; and how to teach visitors, through better signage, how to respect the limestone tors because of their geological value, the ancient Māori cave drawings for cultural reasons, and the endangered flora for its biological significance.

Theft is another risk associated with restricting access or classifying plants as rare and endangered. David Bellamy revealed in the 1990 television documentary *Moa's Ark: To the lifeboats* that 'stupid humans' had stolen a large number of buttercups from their 'land castle' at Castle Hill. Bellamy said that the theft impaired the buttercup's

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78 McCaskill, *The Castle Hill Buttercup*.

79 Deborah Bird Rose, *Wild Dog Dreaming: Love and extinction* (Charlottesville, VA: University of Virginia Press, 2011), 2.

80 Domains–Ranunculus 194263, Ref 2001 2554, 13/25, Archives New Zealand Christchurch Regional Office; phone call with receptionist, Springfield Lime Company, Christchurch, 12 August 2016.

81 Castle Hill Proposed Scenic Reserve 1975–1987, CABK CH781 2949, Box 17, Archives New Zealand Christchurch Regional Office.

82 Castle Hill Scenic Reserve 1988–1990, CABK CH602 2846, Box 3, N6 233/88, Archives New Zealand Christchurch Regional Office; Tim Wethey, *Canterbury Rock: A Rockclimber's Guide to Canterbury and Nearby Areas* (Christchurch: Caxton Press, 1989).

future recovery by severely reducing the baseline population.<sup>83</sup> While the preferred position of the government agency responsible for managing the buttercup, the Department of Conservation (DOC), is not to have knowledge of the theft widely broadcast as it reveals a flaw in the fence and permit system, the incident also serves as a teachable moment by pointing to the dangers behind humans' desire to collect. This was not the first time that humans had entered the reserve without authorisation. In 1950, McCaskill made a reference to 'souvenir hunters' and in 1965 a local botanist, 'Dr Allan', led a group to view the buttercups without a permit. McCaskill wanted to prosecute; however, the director of CCL explained it was not possible. McCaskill instead telephoned Dr Allan and then followed up with a strongly worded letter stressing the importance of safeguarding the plant and its habitat.<sup>84</sup>

Department of Lands and Survey papers also reveal tensions over the naming of the buttercup reserve and who had the right to manage it. The Castle Hill area was named the Lance McCaskill Nature Reserve in 1987, around the time DOC was founded and became responsible for managing the Kura Tawhiti conservation area, as the Castle Hill area is now called. Then in the 1990s, as part of a formal Crown settlement, Ngāi Tahu were formally recognised as the guardians, or *kaitiaki*, of their ancestral lands, which included the McCaskill Reserve because it connected to their ancient network of walking trails that denoted places for hunting and gathering, rest, or spiritual purposes.<sup>85</sup>

In the 1990s the IUCN revised the Red List and correspondence with its staff reveals that 'for no particular reason' little frog had been dropped from it.<sup>86</sup> Had the plant been forgotten under DOC's new management structure or did the department want less attention drawn to the rare and endangered plant? Or was it because the science about the buttercup was being challenged? Taxonomic arguments produced certain rumbles within the scientific community. In 2001, Nicholas Head and the late David Given commented that Canterbury was 'well botanised by good botanists', yet they also noted that the task of assessing the conservation status of regional plants was difficult, primarily because more research was often required.<sup>87</sup> As P. J. de Lange et al. explained, lists, which were first formalised in New Zealand in 1976, required continual updating, and while published in the *New Zealand*

83 Peter Hayden (director and producer), *Moas Ark: To the lifeboats* (Dunedin: Natural History New Zealand, 1990), clip 4, [www.nzonscreen.com/title/moas-ark--to-the-lifeboats-1990](http://www.nzonscreen.com/title/moas-ark--to-the-lifeboats-1990), accessed 20 December 2016.

84 Domains—Castle Hill 1964–1977, Archives New Zealand Christchurch Regional Office.

85 Department of Conservation, 'Tōpuni of Ngāi Tahu: Ngāi Tahu Deed of Settlement Act 1998', (2006), 2, [www.doc.govt.nz/Documents/about-doc/concessions-and-permits/conservation-revealed/topuni-of-ngai-tahu-lowres.pdf](http://www.doc.govt.nz/Documents/about-doc/concessions-and-permits/conservation-revealed/topuni-of-ngai-tahu-lowres.pdf), accessed 20 December 2016; Anderson, 'Māori Land and Livelihood AD 1250-1850', in *The Natural History of Canterbury*, ed. Winterbourn et al., 65–88.

86 Email correspondence, Janet Scott, Red List Unit, IUCN, 22 June 2016.

87 Nicholas Head and David Given, 'Threatened Plants of Canterbury Including Revised Species List', 2001, [researcharchive.lincoln.ac.nz/bitstream/handle/10182/1253/Head\\_Threatened\\_Plants.pdf?sequence=1](http://researcharchive.lincoln.ac.nz/bitstream/handle/10182/1253/Head_Threatened_Plants.pdf?sequence=1), accessed 20 December 2016.



*Botanical Society Newsletter* or *New Zealand Journal of Botany*, they were often missed by the international science community and were not subjected to peer review.<sup>88</sup> In 2008, de Lange's revised list noted that the overall number of threatened plant species in Canterbury had increased; yet the ranunculus community did not feature strongly.<sup>89</sup> That same year, Given and O'Donnell wrote that the classification of the Castle Hill buttercup as a unique species 'no longer had taxonomic validity'.<sup>90</sup> Given and O'Donnell's findings shattered little frog's unique position in Canterbury's botanical history; however, further DNA sampling undertaken by Richard Carter in 2006 at Massey University confirmed that *R. paucifolius* was a 'good taxon'.<sup>91</sup>

## Conclusion

Throughout the centuries, humans have learnt from plants, with each generation checking, critiquing and extending the knowledge gathered from the generation before them. The ancient Māori were possibly the first humans to engage with *R. paucifolius*, yet such encounters were not specifically captured in archaeological evidence or oral traditions. Enys's nineteenth-century scree buttercup provided a window into the colonial period of museum building and collecting, and classifying the natural world. Wall's observations added to the formative knowledge of the plant's taxonomy, distribution and habitat. Brockie embarked on in-situ conservation by transforming little frog's wild habitat into a nursery site, and McPhearson and McCaskill's actions reflected what could be achieved within the confines of pragmatism, mixed with opportunism. Through advocacy and management they ensured the long-term preservation of Castle Hill's unique subalpine plant community for future generations of scientists, even though protecting the plant also exposed it to the danger of theft.

Examining botanical specimens and a number of scientific papers has revealed the process of how a particular plant that was once 'strange and foreign' became 'familiar' and 'endangered'. Even though little frog's natural habitat is protected, like many other vascular plants in the Canterbury region, this ageing buttercup

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88 P. J. de Lange et al., 'Threatened and uncommon plants of New Zealand', *New Zealand Journal of Botany* 37, no. 4 (1999): 603–28; P. J. de Lange et al., 'Threatened and uncommon plants of New Zealand', *New Zealand Journal of Botany* 42, no. 1 (2004): 45–76; P. J. de Lange et al., 'Threatened and uncommon plants of New Zealand (2008 revision)'.

89 de Lange et al., 'Threatened and uncommon plants of New Zealand', *New Zealand Journal of Botany* 47, no. 1 (2009): 66.

90 Given and O'Donnell, 'Rare and endangered plants and animals', in *The Natural History of Canterbury*, ed. Winterbourn et al., 808; In 1980 Given obtained permission to remove leaves from *R. paucifolius* for DNA testing and histology, the study of plant cells and tissues.

91 Richard Carter, 'Phylogenetics and ecology in the study of alpine plant evolution and distribution: A case study of New Zealand alpine *Ranunculus*', *New Zealand Journal of Botany* 45 (2007): 45; Email correspondence, Ines Schönberger, Allan Herbarium and Plant Identification Service, Landcare Research Manaaki Whenua, Lincoln, 17 February 2017.

population could be heading towards extinction. The prospect of losing *R. paucifolius* adds poignancy to the plant's ephemeral memory held in museum, archive, botanic garden and university collections. As Dorfman notes, collections are 'living ecologies', so researchers can use these fragments of botanical memory to simultaneously 'look back' at the nature–culture engagements of the past in order to help shape an alternative future through public education.<sup>92</sup>

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92 Dorfman, 'Intangible Natural Heritage: An Introduction'.